Dynamic Engineers Inc.
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OCXO2828LULN2
High Stability Sine Wave SMD OCXO

Features and Benefits

High frequency stability (up to ±5 ppb over -40°C to +85°C)
Low long term aging (up to ±2 ppb per day)
Low power consumption (up to 250 mA steady state @ +25°C)
Compact SMD design

Typical Applications

SATCOM System
Portable Microwave Applications

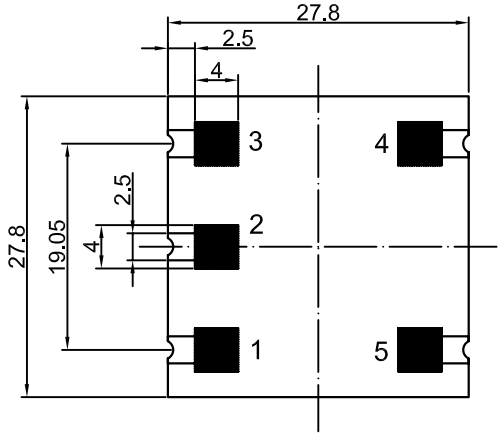
Description

OCXO2828LULN2 series offers high frequency stability, low long term aging and power consumption, with wide range of frequency stability vs. operating temperature options, all in a compact SMD package to suit the different communication needs.

Mechanical Drawing & Pin Connections

Drawing No: **MD140067-1**

Bottom View

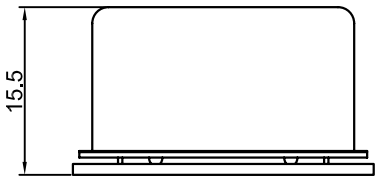


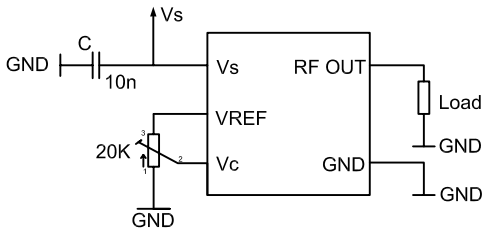
Pin Connections:

PIN #	Symbol	Function
1	RF OUT	RF Output
2	GND	Ground
3	Vc	Control Voltage (EFC)
4	VREF	Reference Voltage
5	Vs	Supply Voltage

Unit in mm
1mm = 0.0394 inches

Side View





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Specifications

Oscillator Specification	Sym	Condition	Value Min.	Value Typ.	Value Max.	Unit	Note
Operational Frequency Range	F_{nom}		5		150	MHz	
Standard Frequencies			10.000, 100.000, 125.000			MHz	
RF Output							
Signal Waveform			Sine wave				
Load	R_L	±5%	50			Ω	
Output Level			+7			dBm	Note 3
Harmonics					-30	dBc	
Spurious					-90	dBc	
Warm-up time @ +25°C		Δf_{final} / f_0< ±0.1 ppm		3	5	min	
Power Supply							
Reference Voltage VREF Output		≤ 40 MHz >40 MHz		5.0 10.0		V	Note 4
Supply Voltage	V_S		11.4	12.0	12.6	V	
Current Consumption		Steady state, +25°C			150	mA	Note 5
		Warm-up			350	mA	Note 5
Frequency Adjustment Range							
Electronic Frequency Control (EFC)			±2 ±0.8		±5	ppm	AT-Cut SC-Cut
EFC voltage	V_c		0	VREF / 2	VREF	V	
EFC Slope	$\Delta f/\Delta V_C$		positive				
EFC Input Impedance			100			kΩ	
Frequency Stability							
Versus Operating Temperature Range		Steady state	Refer to ordering options				
Initial Tolerance @+25°C		V_C@ VREF / 2			±300	ppb	
Versus supply voltage variation (pushing)	V_S	±5%			±10	ppb	
Versus load change (pulling)	R_L	±5%			±5	ppb	
Long Term Aging Per Day (after 30 days operation)		AT-Cut SC-Cut			±10 ±2	ppb	Note 2
Long Term Aging 1st Year (after 30 days operation)		AT-Cut SC-Cut		±300 ±50	±500 ±200	ppb	Note 2
Phase noise			Please consult DEI for details				
Environmental Conditions							
Operating temperature range	Refer to ordering options						
Storage temperature range	-55°C to 125°C						
Enclosure (see drawing) L x W x H	27.8 x 27.8 x 15.5 mm max. Note 6						
Weight	20 g max						

1. Terminology and test conditions are according to IEC60679-1 and MIL-PRF-55310, unless otherwise stated
2. Lower aging available on request
3. Other output level available on request
4. Other reference voltages available on request
5. May be higher for wide operating temperature range
6. Lower height H available on request

Absolute Maximum Ratings

Parameter	Sym	Min.	Max.	Unit	Condition
Supply Voltage	V_S	-0.5	V_S + 10%	V	V_S to GND
Control Voltage	V_C	-0.5	15	V	V_C to GND

Handling and Testing

Parameter	Procedure		Condition
Electrostatic Discharge (ESD)			
THD Devices	IEC60749-26	HBM	2000V
SMD Devices	IEC60749-27	MM	200V
Washable	Yes		
RoHS-Compliant	Yes		

Ordering Options: Frequency vs. Operating Temperature

Frequency Stability		Temperature (Lower)		Temperature (Upper)	
Code	Stability [ppb]	Code	T (°C)	Code	T (°C)
1	±5	1	0	1	+50
2	±10	2	-10	2	+60
3	±25	3	-20	3	+70
4	±50	4	-30	4	+75
5	±100	5	-40	5	+80
6	±200	6	-55	6	+85

Ordering Codes

Model	Frequency in MHz (up to 3 digits)	Frequency Stability	Minimum Operating Temperature	Maximum Operating Temperature
OCXO2828LULN2	xxx.yyy	t	w	Z

Example: OCXO2828LULN2-100.000-3-5-6 has the following specifications

Frequency = 100.000 MHz
Stability = ±25 ppb
Operating Temperature = -40°C to +85°C

***Note: Not all combinations of stability and operating temperature limits are available. Please consult DEI for further details.

Environmental Conditions

Test	IEC 60068 Part…	IEC 60679-1 Clause	MIL-STD-202G Method	MIL-STD-810F Method	MIL-PRF-55310D Clause	Test Conditions (IEC)
Sealing tests (if applicable)	2-17	5.6.2	112E		3.6.1.2	Gross leak: Test Qc, Fine leak: Test Qk
Solderability Resistance to soldering heat	2-20 2-58	5.6.3	208H 210F		3.6.52 3.6.48	Test Ta Method 1 Test Td_1 Method 2 Test Td_2 Method 2
Shock	2-27	5.6.8	213B	516.4	3.6.40	Test Ea, 3 x per axes 100g, 6 ms half-sine pulse
Vibration sinusoidal	2-6	5.6.7.1	201A 204D	516.4-4	3.6.38.1 3.6.38.2	Test Fc, 30 min per axes, 10 Hz – 55 Hz 0,75mm; 55 Hz – 2 kHz, 10g
Vibration, random	2-64	5.6.7.3	214A	514.5	3.6.38.3 3.6.38.4	Test Fdb
Endurance tests - aging - extended aging		 5.7.1 5.7.2	108A		 4.8.35	 30 days @+85°C, OCXO @ +25°C 1000h, 2000h, 8000h @ +85°C